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मानक

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“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8271-2-16 (1985): Quartz Crystal Units Used for Frequency Control and Selection, Part 2: Series AA for Oscillators, Section 16: Quartz Crystal Unit Type AA-16 [LITD 5: Semiconductor and Other Electronic Components and Devices]



“ज्ञान से एक नये भारत का निर्माण”

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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR QUARTZ CRYSTAL UNITS USED FOR FREQUENCY CONTROL AND SELECTION

PART 2 SERIES AA FOR OSCILLATORS

Section 16 Quartz Crystal Unit Type AA-16

0. General — This standard shall be read in conjunction with IS : 8271 (Part 1)-1981 'Specification for quartz crystal units used for frequency control and selection: Part 1 General requirements and tests (first revision)'.

1. Outline and Dimensions — Holder outline shall conform to type AA [see IS : 4570 (Part 2)-1983 Specification for crystal unit holders: Part 2 Metal, solder seal, two pin crystal unit holders, types AA and AB].

2. Marking — See 8 of IS : 8271 (Part 1)-1981.

3. Construction and Workmanship — See 7 of IS : 8271 (Part 1)-1981.

4. Test Schedule and Detail Requirements

4.1 General Conditions for Test — See 9.2 of IS : 8271 (Part 1)-1981.

4.2 Test Schedule — The sequence and grouping of type, routine and acceptance tests shall be as specified in 9.1 of IS : 8271 (Part 1) - 1981

4.3 Detail Requirements — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

TABLE 1 DETAIL REQUIREMENTS OF QUARTZ CRYSTAL UNIT TYPE AA-16

SI No. (1)	Characteristics (2)	Requirements (3)	
i)	Type of holder	AA (See 1)	
ii)	Frequency range	0.8 to 20 MHz	
iii)	Frequency tolerance:		
	Operating temperature range	± 50 ppm	
iv)	Load capacitance	32.0 ± 0.5 pF	
v)	Mode of oscillation	Fundamental	
vi)	Operating temperature range	-55 to +105°C	
vii)	Test set, calibration values and rated drive level	See Table 2	
viii)	Capacitance shunt	7 pF (Max)	
ix)	Resonance resistance	See Table 3	
x)	Shock : [As per 9.15 (Severity A) of IS : 8271 (Part 1)-1981]:	Below 2 MHz	2 MHz and above
	a) Frequency change permitted	±10 ppm	±5 ppm
	b) Resonance resistance change permitted	±15 percent	±10 percent
xi)	Vibration : [As per 9.16.1 (Severity A) of IS : 8271 (Part 1)-1981]:	Below 2 MHz	2 MHz and above
	a) Frequency change permitted	±10 ppm	±5 ppm
	b) Resonance resistance change permitted	±15 percent	±10 percent
xii)	Temperature cycling:		
	a) Frequency change permitted	Below 2 MHz	2 MHz and above
	b) Resonance resistance change permitted	± 10 ppm	± 5 ppm
		± 15 percent	± 10 percent
xiii)	Ageing:		
	Frequency change permitted	5 ppm	

TABLE 2 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[Table 1 (SI No. vii)]

SI No.	Frequency Range	Calibration Values			Rated Drive Level	Standard Test Set
		Resistance	Crystal Current	Resistor Voltage Drop		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	MHz	ohms	mA	V	mW	
i)	From 0.8 to 1.5	100	10	—	10.0 ± 2.0	TS330/TSM
ii)	Over 1.5 to 2.25	50	15	—	10.0 ± 2.0	
iii)	Over 2.25 to 3.4	40	15	—	10.0 ± 2.0	
iv)	Over 3.4 to 5.1	25	20	—	10.0 ± 2.0	
v)	Over 5.1 to 7.5	14	25	—	10.0 ± 2.0	
vi)	Over 7.5 to 10	11	30	—	10.0 ± 2.0	
vii)	Over 10 to 15	13	20	—	10.0 ± 2.0	TS683/TSM
viii)	Over 15 to 20	10	— 0.22	—	5.0 ± 1.0	

TABLE 3 RESONANCE RESISTANCE

[Table 1 (SI No. ix)]

Frequency Range	Maximum Resonance Resistance
(1)	(2)
MHz	ohms
From 0.8 to 0.85	630
Over 0.85 to 0.9	600
Over 0.9 to 1	580
Over 1 to 1.12	540
Over 1.12 to 1.25	490
Over 1.25 to 1.37	450
Over 1.37 to 1.5	410
Over 1.5 to 1.62	380
Over 1.62 to 1.75	330
Over 1.75 to 1.87	300
Over 1.87 to 2	290
Over 2 to 2.12	270
Over 2.12 to 2.25	250
Over 2.25 to 2.6	200
Over 2.6 to 3	150
Over 3 to 3.4	110
Over 3.4 to 3.75	90
Over 3.75 to 4	75
Over 4 to 5	60
Over 5 to 7	35
Over 7 to 10	24
Over 10 to 15	22
Over 15 to 20	20

EXPLANATORY NOTE

This standard covers the requirements of crystal units quartz, style QC-11 of JSS 50903(1971) 'Detail specification for crystal unit, quartz styles QC-10, QC-11, QC-14, QC-15, QC-16, QC-17, QC-18 and QC-19' issued by the Directorate of Standardization, Ministry of Defence (India).